

Appl. No. 10/782,448  
Amdt. Dated October 28, 2005  
Reply to Office Action of July 28, 2005

Docket No. CM05888G  
Customer No. 22917

**Amendments to the Drawings:**

Please amended figures 1-4 as indicated in the attached replacement sheets and annotated sheets showing changes. The changes include adding a "Prior Art" legend to figures 1-3 and adding the reference number "400" as disclosed in the specification. No new matter was added by these amendments.

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### REMARKS/ARGUMENTS

#### Election/Restrictions:

The Examiner has restricted the application to one of two inventions: Invention I comprising Claims 1-23 and Invention II comprising Claims 24-25. Applicants elect Claims 1-23 for continued prosecution, with traverse, and thereby have correspondingly withdrawn claims 24-25 from consideration.

#### Allowed/Allowable Claims:

Applicants acknowledge that the Examiner has allowed Claims 20-23 and further acknowledge that the Examiner has objected to Claims 5-10 and 15-19 and has stated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants submit that based on the arguments below, Claim 1 and the claims dependent therefrom (including Claims 5-10) are allowable, and similarly Claim 11 and the claims dependent therefrom (including Claims 15-19).

#### Drawing Objections:

The Examiner has objected to the drawings stating that Figures 1-3 should be designated by a legend such as —Prior Art—because only that which is old is illustrated, and Figure 4 fails to show elements 400 and 402 as described in the specification. Applicants submit that they have amended each of figures 1-3 to include the legend “Prior Art.” Applicants have also amended figure 4 to include the reference number “400.” The reference number “402” was already included in figure 400, thereby rendering unnecessary any further amendments to figure 4. Applicants, therefore, request that the Examiner remove all objections to the drawings and accept the drawings as amended.

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### **Claim Rejections:**

The Examiner has rejected Claims 1-4 and 11-14 under 35 U.S.C. 102(b) as being anticipated by Maalej, et al. (USPN 6,249,180)). Applicants traverse these rejections. Applicants submit that since Maalej is so different from the embodiments of the inventions as recited in Claims 1 and 11 and their respective dependent claims, this reference fails to disclose any of the limitations recited in Claims 1-5 and 11-14.

Maalej, et al. discloses a "QAM demodulator having a carrier recovery circuit that includes a phase estimation circuit and an additive noise estimation circuit which produces an estimation of the residual phase noise and additive noise viewed by the QAM demodulator." Abstract. While Maalej, et al. touches on timing recovery and carrier (frequency) recovery (blocks 35 and 50 of Fig. 6), these are not implemented as the methods recited in Claims 1-5 and 11-14. In fact, Maalej, et al. does not provide details of how these blocks work to even compare to the method steps recited in these claims. For example, Column 6, line 52 mentions that "the carrier recovery circuit 50 includes a frequency offset detect 525 circuit," but the operation of the frequency offset detect circuit is not explained. Likewise, Maalej's timing recovery circuit 35 contains a "timing error detector 354" as shown in FIG. 7. However, although many details are provided regarding *how* the output of timing error detector 354 is utilized (columns 7 and 8), the operation of detector 354 itself is not disclosed.

Moreover, the Examiner has cited to passages in Maalej, et al. that refer to phase noise and a corresponding phase noise estimator and additive noise and a corresponding additive noise estimator, e.g., Col. 2, lines 25-27 defining additive noise, and col. 9, lines 15-25 and 34-41. However, Maalej's noise estimates are not employed to determine timing or frequency errors (which is the result of the methods recited in Claims 1-4 and 11-14). According to Col. 9, lines 2-10 of Maalej, et al., the phase and additive white noise estimates are only used "to optimize the carrier loop bandwidth in order to reach the best tradeoff between the phase noise and the additive noise."

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In addition, Maalej discloses in col. 9, lines 15-20 that "[t]he symbol detection block 508 decides on the most probably transmitted QAM symbol, by searching for the minimum distance between the received QAM symbol and possible transmitted symbols (threshold symbols). In this way, the symbol detection block 508 determines which QAM symbol is transmitted. The Least Mean Square (LMS) error between the decided QAM symbol 509 and the received QAM symbol 504 is determined by the LMS error method 505 as known in the art and the LMS error signal 512 is supplied with the decided QAM symbol 509 to each of the phase noise 506 and additive noise 507 estimators." However, the searching through a range of receive symbol hypotheses to select the most likely transmitted symbol and using the error between the received symbol and transmitted symbol hypothesis to compensate for frequency offset, among other things (as is disclosed in Maalej, et al.) is quite different than "a) calculating a first noise estimation for a first frequency offset in a frequency search space; b) calculating at least a second noise estimation for a second frequency offset in said frequency search space; and c) determining a minimum noise estimation from said calculated noise estimations, wherein said frequency error is the frequency offset corresponding to said minimum noise estimation" as is recited in Claim 1 and "a) calculating a first noise estimation for a first timing offset in a timing search space; b) calculating at least a second noise estimation for a second timing offset in said timing search space; and c) determining a minimum noise estimation from said calculated noise estimations, wherein said timing error is the timing offset corresponding to said minimum noise estimation" as is recited in Claim 11.

For these reasons, applicants submit that Claims 1-4 and 11-14 are in a condition for allowance.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

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The Applicants believe that the subject application, as amended, is in condition for allowance. Such action is earnestly solicited by the Applicants.

In the event that the Examiner deems the present application non-allowable, it is requested that the Examiner telephone the Applicant's attorney or agent at the number indicated below so that the prosecution of the present case may be advanced by the clarification of any continuing rejection.

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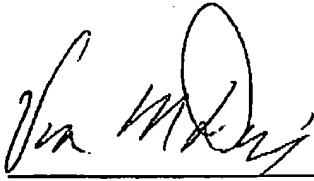
Please charge any fees that may be due to Deposit Account 502117, Motorola, Inc.

Respectfully submitted,

SEND CORRESPONDENCE TO:

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Customer Number: 22917

By:



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Attachments